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PATENT APPLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

the application of:

Attorney Docket No.: 2950.25US01

Kumar et al.

Confirmation No.:

Application No.: 09/136,483

Examiner: M. Marcheschi

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Group Art Unit 1755

For: ALUMINUM OXIDE PARTICLES

Appeal No.: 2001-1031

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REQUEST FOR RECONSIDERATION

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

BOARD OF PATENT
APPEALS &
INTERFERENCES
MAY 20 2003

Sir:

In response to the Decision On Appeal from the Board mailed on February 27, 2003, Applicants respectfully request reconsideration of the decision. In the decision, the Board affirmed the rejection of claims 1-3, 5-16 and 19-22 and reversed the rejection of claims 17 and 18. Specifically, Applicants respectfully assert that the Board made errors of law and fact with respect to affirming the rejection of claims 1-3, 5-16 and 19-22. In view of the comments below, Applicants respectfully request reconsideration and reversal of the rejection of claims 1-3, 5-16 and 19-22.

In summary, the Board made errors of law with respect to both claim interpretation and the enablement of the Rostoker patent. Furthermore, the Board made an error of fact with respect to interpreting the particle size distribution in the Rostoker patent

Error Of Law With Respect To Claim Interpretation

Applicants respectfully assert that the Board made an error of law with respect to claim interpretation in the Decision on Appeal. The Board asserted in the Decision on Appeal (page 7) that, "[u]se of the word 'comprising' does not preclude the presence of additional components or particles. See In re Baxter, 656 F.2d 679, 686, 210 USPQ 795, 802 (CCPA 1981)." The Board further asserted that the claims, as drafted, do not preclude the presence of a tail in the particle distribution. Decision at page 7. Applicants respectfully assert that the Board has interpreted the case law out of context. In particular, the open nature of the term "comprising" is limited by the need to be internally consistent with the context of the elements in the claim. Properly interpreted, the claim does not provide for a tail in the distribution of particle diameters. The proper claim interpretation is explored in the following discussion. To the extent that the Board's decision rests on this erroneous claim interpretation, Applicants respectfully request reconsideration of the rejection of claims 1-3, 5-16 and 19-22.

It is well established in patent practice that the term comprising "is inclusive or open-ended and does not exclude additional **unrecited** elements or method steps." MPEP 2111.03 (citations omitted, emphasis added). However, the term "comprising" does not permit the addition of any element. Spectrum Int'l Inc. v. Sterilite Corp., 49 USPQ2d 1065, 1069, 164 F.3d 1372 (Fed. Cir. 1998) (emphasis added). In particular, the term "comprising" does not allow the addition of subject matter that has been excluded from the claim. Id. at 1070. As noted in Spectrum Int'l Inc. where subject matter was excluded from the claim, the "claim term 'comprising' cannot restore this excluded subject matter." Id. While "comprising" indicates that other elements may be added, the subject matter with the additional elements must still form a construct within the scope of the claim. Genentech, Inc. v. Chiron Corp., 112 F.3d 495, 501, 42 USPQ2d 1608, 1613 (Fed. Cir. 1997).

The Court in Moleculon Research Corp. v. CBS, Inc., 793 F.2d 1261, 229 USPQ 805, 812 (Fed. Cir. 1986) stated that,

“The transitional phrase, which joins the preamble of a claim with the body of a claim, is a term of art and as such affects the legal scope of a claim. While a transitional term such as 'comprising' or... 'which comprises' does not exclude additional unrecited elements, or steps (in the case of a method claim), we conclude that the transitional phrase does not, in the present case, affect the scope of the particular structure recited within the method claim's step.... The district court erred... in using the transitional phrase 'which comprises' to expand the scope of the recited 'eight cube pieces.' ”

The Court in Moleculon limited the transitional phrase “comprising” to avoid adding elements of a recited type beyond the explicitly recited number. Specifically, the claim recited 'eight cube pieces,' and the court ruled that the claim did not encompass an embodiment with 27 ($3 \times 3 \times 3$) or 64 ($4 \times 4 \times 4$) cube pieces even though the claim had a comprising transition.

While the Patent Office can read claims to give their broadest **reasonable** interpretation, the case law on the scope of comprising indicates that the reasonable scope of the term comprising is not unlimited. Rather than interpreting the transitional phrase “comprising” in an unlimited sense, the case law points instead to construing "comprising" so as to avoid altering the character imparted by the explicit claim elements or to add excluded subject matter to a claim.

The Board's broad interpretation of the term “comprising” to include additional particles (e.g. including a tail) within the claimed collection of particles is not supported by the case law. In particular, it is not reasonable to interpret comprising to eliminate effectively the meaning of the explicit claim terms. Applicants' independent claim 1 contains the language “less than about one in 10^6 particles have a diameter greater than about three time the average diameter of the collection of particles.” Applicants independent claim 19 contains the language "a distribution of particle sizes such that at least about 95 percent of the particles have a diameter greater than about

40 percent of the average diameter and less than about 160 percent of the average diameter." The Board's interpretation indicates the collection of particles can comprise more particles that have properties directly at odds with the specific characteristics noted in the claim. Basically, the Board's construction would cover all particle collections in which at least one of the particles comprises aluminum oxide and there were at least one particle with a diameter less than 500 nm and larger than 5 nm. Applicants respectfully submit that it is **unreasonable** to interpret the claim to eliminate the **explicit** claim terms. Furthermore, the broad interpretation proffered by the Board is especially at odds with Applicants' specification since the specification states that the plot of particle diameters does not have a tail at large diameters (see, for example, page 20, line 16 to page 21, line 10).

The case law makes it clear that the term "comprising" should not be given the function of broadening the claim to read in elements that contradict the remaining portions of the claim. The Board's interpretation is contrary to the explicit language in the claim and fundamentally alters the recited scope of the explicit elements. Thus, the Board's claim interpretation is not reasonable and represents legal error.

Applicants have shown that the Board's claim interpretation is contrary to case law and hence the presence of a tail is precluded from claims 1 and 19. The Board noted that the evaluation of patentability begins with claim interpretation. Decision at page 7. Accordingly, in view of the incorrect claim interpretation, Applicants respectfully request that the Board reverse the rejection of claims 1-3, 5-16 and 19-22.

Error Of Fact With Respect To Interpreting Disclosure In The Rostoker Patent

The Board stated its agreement with the Examiner that the Rostoker patent discloses a collection of particles having both the size and distribution within Applicants' claimed range. Decision at page 7. Additionally, the Board presents its own factual analysis regarding the

interpretation of the Rostoker patent in an Appendix to the decision. Since the Board has presented further evidence in their decision, Applicants also present further evidence in the form of a Declaration by an expert and further arguments in rebuttal. Based on the analysis below, Applicants maintain the Rostoker patent does not teach their claimed invention.

In the Examiner's Final Rejection, there were roughly 26 grounds of rejection. Of these, only two were maintained following the filing of Applicants' appeal brief. Unfortunately, due to the large number of rejections in the Examiner's final rejection, the factual issues surrounding the Rostoker patent perhaps were not as fully developed during prosecution as they might have been. The Board noted the specification of a quality factor Q in the Rostoker patent. However, the precise meaning of this term is not clear. In support of this proposition, Applicants present a Declaration of one of the world's leading experts in this technology, Professor Singh. Professor Singh's Declaration, in Appendix 1, makes it clear that the quantity "Q" is simply not well defined in the Rostoker patent. This Declaration was prepared for another application of NanoGram Corporation for a closely related Rostoker patent 5,626,715, which is identical in relevant aspects with Rostoker patent, 5,389,194 under the present rejection. (Note that the Singh Declaration inadvertently referred to the patent number as 5,128,081, which is the Siegel patent referred to in both Rostoker patents.)

With all due respect, the Board's analysis of the discussion in the Rostoker patent ignores the discussion of Q. The Board has made a reasonable attempt at giving meaning to Y. But this interpretation does not follow from the Rostoker patent. In particular, the Rostoker patent goes on to indicate the Y is related to a quality factor Q. **Q is something that is calculated from the actual distribution of particle sizes. Y does not have the simpler definition suggested by the Board.** In particular, the Rostoker patent at column 7, lines 18-26 states that

A quality factor "Q" is inversely related to "Y", and is a measure of the distribution of particle sizes. "Q" can be calculated as the concentration of particles at the

desired size "X", divided by the range of sizes of particles at 3 db (decibels) lower than "X". Preferably, the size distribution of alpha aluminum oxide particle used for polishing exhibits a "Q" of at least 10, including 10, 50, 100, 500, 1000, 5000, or 10,000 ("Q" is dimensionless).

Due to its relationship to "Q" which is explicitly but unintelligibly defined, "Y" cannot be so easily defined as the Board has indicated. Thus, the Board's interpretation ignores the full teaching of the Rostoker patent. Even within the Board's view, the use of +/- terminology of the Board's attempt at most interprets one parameter of the particle size distribution. Within this notation, the spread generally is a confidence interval based on a particular probability level. See Appendix 2, which are pages from a Quantitative Analysis text. The probability level is not specified. Thus, even the Board's distribution does not exclude a tail in the distribution contrary to the subject matter of Applicants' claim 1.

Applicants maintain that the distribution of particle sizes specified in the Rostoker patent cannot be interpreted in any definite way. The Board's interpretation is based on factual error due to ignoring a portion of the discussion in the Rostoker patent and imposing their own interpretation on unclear language without any basis. Accordingly, due to the inability to interpret the description in the Rostoker patent, the Rostoker patent does not prima facie render obvious claims 1-3, 5-16 and 19-22.

Error Of Law With Respect To Enablement Of the Rostoker Patent

The Board affirmed the rejection based on a prima facie showing of obviousness. See Board decision at page 9. Assuming arguendo that the Rostoker patent does suggest Applicants' claimed invention contrary to the above two sections, Applicants have rebutted the enablement of the Rostoker patent to practice Applicants' claimed invention. In its Decision on Appeal, the Board agreed with the Examiner that Rostoker does not state that the only method of making the aluminum oxide particles used in the claimed invention is by the method disclosed in the Siegel

patent and that Rostoker merely references the Siegel patent as one known method for controllably producing the ultrafine-grained or nanocrystalline materials. Decision at page 6. However, the Board made a clear error of law in evaluating Applicants' rebuttal evidence. In particular, Applicants clearly rebutted the enablement of the disclosure of the Rostoker patent with respect to the practice Applicants' claimed invention without undue experimentation. The Board inappropriately shifted a larger burden to Applicants, contrary to the law, to prove patentability rather than the failure of the Rostoker disclosure to enable the practice of Applicants' claimed invention. The Board did not even raise the issue of the enablement provided by the Rostoker patent. Applicants respectfully request reconsideration of the analysis of the enablement of the Rostoker patent based on the following comments.

The respective burdens in this case were discussed in detail in Applicants' Brief. These are incorporated herein by reference. Applicants summarize the issues directly relevant for the following discussion.

The proposition is well established that the cited art only renders a composition of matter or apparatus unpatentable to the extent that the cited art enables the disputed claims, in other words, if the cited art provides a means of obtaining the claimed composition or apparatus. Assertions in a prior art reference do not support an anticipation or obviousness rejection unless the references place the claimed invention in the hands of the public. Beckman Instruments Inc. v. LKB Produkter AB, 13 USPQ2d 1301, 1304 (Fed. Cir. 1989). "In order to render a claimed apparatus or method obvious, the prior art must enable one skilled in the art to make and use the apparatus or method." Id. While a properly citable reference is prior art for all that it teaches, references along with the knowledge of a person of ordinary skill in the art must be enabling to place the invention in the hands of the public. In re Paulsen, 31 USPQ2d 1671, 1675 (Fed. Cir. 1994). See also In re Donohue, 226 USPQ 619, 621 (Fed. Cir. 1985). "But to be prior art under section 102(b), a reference must be enabling. That is, it must put the claimed invention in the hands

of one skilled in the art." In re Sun, 31 USPQ2d 1451, 1453 (Fed. Cir. 1993)(unpublished). An **enabling disclosure** is one that allows a person of ordinary skill to practice the technology without undue experimentation. based on the guidance in the disclosure along with what is well known in the art. In re Wands, 858 F. 2d 731,737, 8 USPQ2d 1400,1404 (Fed. Cir. 1988).

See also Ex parte Logan, 38 USPQ2d 1852, 1856 (BPAI 1994) (unpublished). While this Board case is not binding precedent on the present Board, it is probative of an appropriate analysis under the present facts. In Ex parte Logan, Id., the claims were rejected over a patent and a corresponding patent application. In response to the rejection, applicants argued that the cited patent and application were inoperable. In support of the applicants' assertions, a declaration was presented. The examiner dismissed the declaration as mere opinion by an interested party. The board noted that the factual evidence presented in the declaration was probative of the issues. Furthermore, the examiner did not offer any evidence or argument that the required modifications to make the previous invention functional would have been made by a person of ordinary skill in the art. The board concluded that the appellant had met their burden of rebutting the presumption of operability of the prior art patent by a preponderance of the evidence. Id. In reaching this holding the court expressly noted that, "the examiner has failed to shoulder his burden of rebutting the appellant's evidence of non-enablement/inoperability." Id.

The point is further taken in In re Payne, 606 F.2d 303, 315, 203 USPQ 245 (CCPA 1979) (citing In re Hoeksema, Supra, 399 F.2d 269, 275, 55 CCPA 1493, 1501, 158 USPQ 596, 601 (CCPA 1968)), where the Court stated, "To successfully rebut the examiner's prima facie case of enablement, it was incumbent upon Payne [appellant] to introduce affidavits or other factual evidence in support of his position. ...facts set forth in an affidavit (37 CFR 1.132) of an expert in the field suggesting that inoperativeness, would be highly probative." Id. (citations omitted).

Under the present facts, the Examiner and the Board have mistakenly placed the burden on Applicants that there is no known way in the art to practice Applicants' claimed invention. This burden is the Examiner's and not Applicants' burden. Under the assumptions ignoring the previous sections of this Request, it is only **Applicants' burden** to establish by a preponderance of the evidence that the disclosure in the Rostoker patent does not **enable** one of ordinary skill in the art to practice Applicants' claimed invention. Applicants have more than adequately met their burden and the requirement of a higher burden is an error of law.

The Rostoker patent only explicitly refers to the Siegel patent as a source for ultrafine powders. The Board and the Examiner noted (see Decision at page 4) that the Rostoker patent does not state that the only method of making the particles is by the method of Siegel. **While the Rostoker patent does not indicate that the Siegel method is the only way of making the particles, the mere suggestion that it is not limited to the Siegel method is not the equivalent of enabling disclosure.** It is the Rostoker patent that must be enabling, not some unspecified other way of making the particles.

Applicants' have presented **unrebutted** evidence that the Siegel patent does not enable the practice of Applicants' claimed invention. The Board does not seem to question this rebuttal evidence. **The only other possible source of enablement in the Rostoker patent** is the mere suggestion that there may be other **unspecified** ways of obtaining the particles. **The implication that there may be other unspecified ways of making the particles can only be enabling disclosure if the unspecified ways are known to a person of ordinary skill in the art.** A person of ordinary skill in the art would need to exert at least undue experimentation unless the skilled artisan knows how to make or obtain the claimed particles without any further guidance since Rostoker does not provide any guidance.

Since the issue is whether or not a person of ordinary skill in the art would know of a way of making or obtaining the claimed particles without any guidance, Dr. Kambe's

Declaration is directly on point. This is contrary to the Boards' determination that "this declaration is unpersuasive since it fails to address the examiner's prima facie showing of obviousness of the claimed collection of particles." Decision at page 9. The Board also asserts that Dr. Kambe's Declaration is "unsupported by any type of evidentiary showing." Id. The assertion is based on a misunderstanding of what Applicants were demonstrating. Dr. Kambe is certainly a person with at least ordinary skill in the art. He was selected by the International Center for Materials Research to lead an effort for the production of ultrafine particles based on laser pyrolysis. Dr. Kambe's experiences built on his extensive technical experiences as a senior scientist at NTT in Japan and his Ph.D. from MIT. Dr. Kambe's Declaration directly addressed that a person of ordinary skill in the art could not practice Applicants' claimed invention based on the meager disclosure in the Rostoker patent. **Nothing more was needed to be shown.** Perhaps, the Boards' complaints should be directed to the meager disclosure in the Rostoker patent not to the showing in the Kambe Declaration **since the Rostoker patent provided little to refute.** Applicants' burden with respect to refuting enablement is lower not higher because the guidance provided by Rostoker was nonexistent. To make Applicants' burden higher because the Rostoker patent provides no guidance on the production of the claimed particles is unreasonable and contrary to the law.

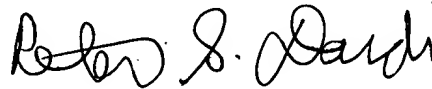
The Board and Examiner's implied assertion that Applicants must provide evidence of more with respect to showing that there is no other way of making Applicants' claimed invention is a shifting of burdens contrary to the law. **Applicants' simply do not as a matter of law have the burden to prove patentability** if the Rostoker patent only suggests that there may be some unspecified way of making Applicants' claimed invention. Applicants' have clearly rebutted the enablement of the Rostoker patent by preponderance of the evidence. If a person of ordinary skill in the art could practice the claimed invention without undue experimentation based on the disclosure in the Rostoker patent, the Examiner should easily be able to support that assertion

with some kind of evidence. The Examiner has presented no evidence to support the enablement of the Rostoker patent with respect to Applicants' claimed invention. **Neither the Board or the Examiner have given any hints of how the Rostoker patent is enabling. Applicants have more than met their burden, and the rejection should be withdrawn.**

CONCLUSIONS

Applicants assert that the Examiner has failed to establish prima facie obviousness. To the extent that the Examiner has established prima facie obviousness, Applicants assert that they have met their burden in rebutting the Examiner's prima facie case. Applicants respectfully request the reversal of the rejection of claims 1-3, 5-16 and 19-22.

Respectfully submitted,



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